

WHAT IS CLAIMED IS:

1. A refrigerant cycle comprising:

- a gas-liquid separator for separating refrigerant into gas refrigerant and liquid refrigerant;

- an evaporator in which the liquid refrigerant flowing from the gas-liquid separator is evaporated after being decompressed;

- a compressor for compressing the gas refrigerant from the gas-liquid separator;

- a radiator which cools the refrigerant discharged from the compressor;

- an ejector including

- a high-pressure refrigerant inlet port from which refrigerant from the radiator is introduced,

- a low-pressure refrigerant inlet port from which refrigerant from the evaporator is sucked,

- a nozzle for decompressing refrigerant introduced from the high-pressure refrigerant inlet port, and

- a pressure-increasing portion in which refrigerant from the evaporator is sucked through the low-pressure refrigerant inlet port by a flow of refrigerant jetted from the nozzle and is mixed with the refrigerant jetted from the nozzle, the pressure-increasing portion having a refrigerant outlet from which refrigerant is discharged to the gas-liquid separator; and

- a throttle control system including

- a bypass passage diverged from a refrigerant

passage at a diverging point that is upstream from the high-pressure refrigerant inlet port, and being joined to the refrigerant passage at a join point that is downstream from the diverging point,

a control valve for controlling a pressure of the refrigerant flowing through the bypass passage, and

a pilot valve that controls of a throttle opening degree of the nozzle in accordance with a pressure difference between the refrigerant in the bypass passage and the refrigerant in the high-pressure refrigerant inlet port of the ejector.

2. The refrigerant cycle according to claim 1, wherein:

the throttle control system further includes a fixed valve that is disposed in the bypass passage to generate a middle pressure refrigerant by using a pressure difference between refrigerant upstream from the fixed valve and refrigerant downstream from the fixed valve; and

the pilot valve controls of the throttle opening degree of the nozzle in accordance with a pressure difference between the middle pressure refrigerant in the bypass passage and the refrigerant in the high-pressure refrigerant inlet port of the ejector.

3. The refrigerant cycle according to claim 1, wherein the fixed valve is disposed in the bypass passage upstream from the control valve.

4. The refrigerant cycle according to claim 1, wherein the fixed valve is disposed in the bypass passage downstream from the control valve.

5. The refrigerant cycle according to claim 1, wherein:
the high-pressure refrigerant inlet port of the ejector is coupled to an outlet of the radiator by a high-pressure refrigerant passage;

the low-pressure refrigerant inlet port is coupled to an outlet of the evaporator by a low-pressure refrigerant passage;

the diverging point of the bypass passage is provided in the high-pressure refrigerant passage; and

the join point of the bypass passage is provided in the low-pressure refrigerant passage.

6. The refrigerant cycle according to claims 1, wherein:
the high-pressure refrigerant inlet port of the ejector is coupled to an outlet of the radiator by a high-pressure refrigerant passage;

the gas-liquid separator has a liquid refrigerant outlet that is coupled to an inlet of the evaporator by a low-pressure refrigerant passage;

the diverging point of the bypass passage is provided in the high-pressure refrigerant passage; and

the join point of the bypass passage is provided in the low-pressure refrigerant passage.

7. The refrigerant cycle according to claim 1, wherein:

the high-pressure refrigerant inlet port of the ejector is coupled to an outlet of the radiator by a high-pressure refrigerant passage;

the outlet of the pressure increasing portion of the ejector is coupled to an inlet of the gas-liquid separator by a low-pressure refrigerant passage;

the diverging point of the bypass passage is provided in the high-pressure refrigerant passage; and

the join point of the bypass passage is provided in the low-pressure refrigerant passage.

8. The refrigerant cycle according to claim 1, further comprising:

a pressure regulating member, which is disposed upstream from the high-pressure refrigerant inlet port of the ejector to generate a middle pressure refrigerant in the bypass passage, having a pressure between the pressure of the refrigerant upstream from the pressure regulating member and the pressure of the refrigerant downstream from the pressure regulating member,

wherein the pilot valve controls the throttle opening degree of the nozzle in accordance with the pressure difference between the middle pressure refrigerant in the bypass passage and the refrigerant pressure in the high-pressure refrigerant inlet port.

9. The refrigerant cycle according to claim 8, wherein the pressure regulating member is a valve, which keeps the pressure difference between the refrigerant upstream from the pressure regulating member and the refrigerant downstream from the pressure regulating member, at a predetermined fixed value.

10. The refrigerant cycle according to claim 1, further comprising a decompressing means for decompressing refrigerant to be introduced to the evaporator from the gas-liquid separator.

11. The refrigerant cycle according to claim 1, wherein the control valve changes the refrigerant pressure in the bypass passage based on a load variation.